PNEUMATIC OIL LUBRICATOR

BACKGROUND OF THE PRESENT INVENTION

The present invention relates to an oiler and more particularly relates to a pneumatic oil lubricator which can activate or stop the pneumatic oil pump automatically when the oil output, such as an oil gun, is switched on or switched off.

Conventional pneumatic oil lubricators comprise a pneumatic motor and an oil pump. A drive shaft of the motor is driven to rotate by compressed air. The rotating drive shaft can drive the interior vanes of the oil Pump to rotate for pumping oil from an oil reservoir to an outlet oil gun via oil hoses.

Since the oil pump will continue functioning even when the oil gun is switched off to close the outlet, the conventional pneumatic oil lubricator should comprise a pouring-back apparatus with safety valve which enables the oil to flow back to the oil reservoir in order to prevent the oil hoses from over pressured.

Practically, even the outlet oil gun is switched off, the conventional oiler, that is the pneumatic motor and the oil pump, will continue work. It is so boresome and inconvenient for an operator, who is operating the oil gun, to get back to turn off the oiler because it is always a long distance between the oiler and the oil gun. However, if we leave the pneumatic motor and the oil pump to actuate when the outlet is closed, it is properly wasting the power source.

SUMMARY OF THE PRESENT INVENTION

The main object of the present invention is to provide a pneumatic oil lubricator which can activate or stop the pneumatic oil pump automatically without the utilizing of electricity or electric equipment when the oil outlet unit, such as an oil gun, is switched on or switched off.

Another object of the present invention is to provide a pneumatic oil lubricator which oil pump is specifically designated for pneumatic oil lubricator that it has smaller size and simplified structure with lower cost than the convention's.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a sectional view of a preferred embodiment according to the present invention.

FIG. **2** is an exploded isometric view of the pneumatic oil pump of the above embodiment according to the present invention.

FIG. **3** is an exploded isometric view of the automatic controlling apparatus of the above embodiment according to the present invention.

FIG. **4** is a perspective view of the above embodiment according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Please referring to FIGS. **1** and **4**, the present invention is a pneumatic oil lubricator which comprises a pneumatic power source **10**, an oil reservoir **20**, a pneumatic oil pump **30**, a safety valve **40**, an automatic controlling apparatus **50**, a plurality of oil hoses **60**, at least an oil outlet unit **70**, a stand **80**, and an oil inlet unit **90**.

The pneumatic power source **10** which supplies compressed air generally is an air compressor.

The pneumatic oil pump **30**, as shown in FIGS. **1** and **2**, comprises a hollow case which has a first end case **31** and a second end case **32**. The second end case **32** is oil-sealed and axially connected with the first end case **31**. The first end case **31** provides an annular air groove **301** at the interior wall which has an air outlet **301***a*. The second end case **32** provides an oil inlet **322** and an oil outlet **323**.

The pneumatic oil pump **30** further comprises an air seat **303**, a vane spindle **305**, a sleeve **324**, at least three gears **312**, a gear ring **313**, a drive shaft **315**, an oil seat **320** and two end covers **34** and **35**.

The air seat **303**, coaxially disposed in a forward end of the first end case **31**, has at least an air inlet passage **304** therein. The sleeve **324** is coaxially disposed in the first end case **31** and secured to the air seat **303**. The sleeve **324** also provides at least an air hole **3241** thereon and two longitudinal air grooves **3242** on it's inner periphery.

The vane spindle **305** comprises a vane seat **306**, a first and a second end shafts **307** and **308** which are coaxially connected to the two ends of the vane seat **306** respectively, and a plurality of vanes **309** which are longitudinally mounted on the corresponding longitudinal slots **3051** provided on the outer surface of the vane seat **306**. The vane spindle **305** is coaxially disposed in the sleeve **324** and connected to the air seat **303** by means of a pair of bearings **310** which are mounted on the first and second end shafts **307** and **308** respectively. One end of second end shaft **308** forms a gear end portion **311**.

The gear ring **313** is coaxially disposed in the first end case **31** and provides an interior near portion **3131**. The three gears **312** each has a central hole **314** and is engaged with the interior near portion **3131** of the gear ring **313** and the gear end portion **311** of the second end shaft **308** of the vane spindle **305**.

The drive shaft **315** has two sections wherein the first section **316***a* is disposed in the first end case **31** and the second section **316***b* is disposed in the second end case **32** by means of a pair of bearings **310***b*. The first section **316***a* of the drive shaft **315** comprises at least three drive pins **316** at one end for inserting into the three central holes **314** of the gears **312** respectively. The other end of the first section **316***a* provides a slot **317**. One end of the second section **316***b* forms a connecting tip **318** which is inserted in the slot **317** for coaxially connecting with the first section **316***a*. The second section **316***b* of the frive shaft **315** further comprises a driving head **319** protruded at the other end portion which forms a plurality of outer longitudinal oil grooves **3191**.

The oil seat **320**, which is coaxially disposed in the second end case **32**, has a central opening **321** which provides a plurality of longitudinal inner oil grooves **3211** that the innermost diameter of the central opening **321** is slightly larger than the outermost diameter of the driving head **319**. The driving head **319** is disposed in the oil seat **320**.

The first end cover **34**, which is secured to the forward end of the first end case **31**, provides at least an air inlet **302**. The second end cover **35** is secured to the rearward end of the second end case **32**.

The automatic controlling apparatus **50**, as shown in FIGS. **1** and **3**, comprises a hollow unit sleeve **501**, a piston **507**, and a spring **511**.

The unit sleeve **501** comprises two portions **5011** and **5012** which are coaxially screwed together to form an hollow sleeve with a seal **502** therebetween. The unit sleeve **501** has a first and a second connecting inlets **503** and **504** at its two ends respectively. An oil chamber